Remarks

Claims 1-11 are pending. Claims 1 and 6 are rejected under 35 U.S.C. § 102(a) as being unpatentable over Minowa et al. (6,243,637) in view of Narita (5,241,477). Claims 2-5 and 7-11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Minowa et al. in view of Narita and Vilim et al. (5,745,382).

Obviousness is a question of law based on factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1 (1966). MPEP § 2141. The Graham factual inquiries include (A) determining the scope and content of the prior art; (B) ascertaining the differences between the claimed invention and the prior art; and (C) resolving the level of ordinary skill in the art. *Id.* "The question of obviousness must be resolved on the basis of these factual determinations. While each case is different and must be decided on its own facts, the *Graham* factors, including secondary considerations when present, are the controlling inquiries in any obviousness analysis." *Id.*

"Once the Graham factual inquiries are resolved, Office personnel must determine whether the claimed invention would have been obvious to one of ordinary skill in the art." MPEP § 2141(III). According to MPEP § 2142, "[t]he key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1396 (2007) noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit." (emphasis added). "'[R]ejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.'" MPEP § 2142 (quoting *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006)).

The Examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness. MPEP § 2142.

Claims 1 and 6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Minowa et al. (6,243,637) in view of Narita (5,241,477). The rejections of claims 1 and 6 are improper because the Examiner's analysis of the Graham factual inquiries is flawed. More specifically, the Examiner erred in setting forth the scope and content of the prior art, and has thus erred in setting forth the differences between the prior art and the claimed invention.

Claim 1 recites, *inter alia*, "determining the first derivative with respect to time of at least a portion of the off-going clutch pressure command; and determining when the on-coming clutch gained torque capacity using the first derivative." The Examiner admits that "Minowa et al does not show determining when the clutch gained torque capacity using the first derivative with respect to time." The Examiner then states that "Narita et al shows when the clutch gained torque capacity using the first derivative (Fig 11, Col 3, lines 60- Col 4, lines 25; Col 9, lines 53-64); the first derivative with respect to time (Col 7, lines 5-10 where the data points are plotted with respect to recorded time; Col 2, lines 14-15)."

Notably, the Examiner merely states that Narita et al. disclose "using the first derivate" and "the first derivative with respect to time," and fails to address the limitation of claim 1 that the first derivative is "of at least a portion of the off-going clutch pressure commmand." (emphasis added) Applicants have reviewed Narita et al. and find no disclosure of "determining the first derivative with respect to time of at least a portion of the off-going clutch pressure command," as recited by claim 1. (emphasis added).

The Examiner has cited five portions of Narita to support the position that Narita discloses "using the first derivate," namely "Fig 11, Col 3, lines 60- Col 4, lines 25; Col 9, lines 53-64" and "Col 7, lines 5-10 where the data points are plotted with respect to recorded time; Col 2, lines 14-15." However, of the five portions of Narita cited by the Examiner, only one discloses a derivative of any type, and none of the five portions of Narita cited by the Examiner discloses "determining the first derivative with respect to time of at least a portion of the off-going clutch pressure command," as recited by claim 1.

More specifically, Figure 11 of Narita et al., which is cited by the Examiner, shows graphs of several transmission variables, but Applicant cannot find any disclosure of "determining the first derivative with respect to time of at least a portion of the off-going clutch pressure command." Indeed, Figure 11 fails to show determining the first derivative of time for any variable or function. If the Examiner maintains the position that Figure 11 of Narita et al. discloses "determining the first derivative with respect to time of at least a portion of the off-going clutch pressure command," then Applicant requests that the Examiner explain with specificity where and how it is disclosed in Figure 11.

The Examiner also cites column 3, line 60 – column 4, line 25 of Narita in support of the Examiner's position. However, this cited text does not disclose "determining the first derivative with respect to time" of any variable or function, and certainly does not disclose "determining the first derivative with respect to time of at least a portion of the off-going clutch pressure command." Rather, this cited text of Narita merely describes how a peak or a drop in output shaft torque is indicative of an undesirable desirable shift, and how, according to one embodiment of Narita, clutch engagement timing is modified in response to finding a peak or a drop in output shaft torque.

More specifically, Narita recites that output shaft torque (T_o) during a preferrable shift has "no torque peak nor torque drop." (Narita, col. 3, line 65), whereas less preferable shifts are characterized by a "torque peak" (Narita, col. 4, line 1) or a "torque drop." (Narita, col. 4, line 5). Narita then describes how, in one embodiment, "during a power-off upshift, the maximum … and the minimum … of the output shaft torque … are determined on output shaft torque variation" and then "a correction value … is decreased by a predetermined value … if the torque peak is found, while the correction value is increased by the predetermined value if the torque drop is found." (Narita, Col. 4, lines 6-9 and lines 16-20).

The Examiner also cites column 9, lines 53-64 of Narita, in which a third embodiment of the invention of Narita is described. Narita states "the third embodiment is different from the first embodiment in that the first time derivative of gear ratio G is used in place of the output shaft torque T_O, and the first time derivative of gear ratio G is compared with

predetermined values delta GM and delta GP to determine whether there occurred a torque peak or a torque down." (Narita, column 9, lines 58-64) (emphasis added). Narita thus discloses using "the first time derivative of gear ratio," but does not disclose "determining the first derivative with respect to time of at least a portion of the off-going clutch pressure command," as recited by claim 1.

The Examiner also cites column 7, lines 5-10 of Narita, where the Examiner states that "the data points are plotted with respect to recorded time." Even assuming that the Examiner is accurate in interpreting column 7, lines 5-10, plotting data points with respect to recorded time is not synonymous with determining a first derivative with respect to time of a variable of function. Moreover, the Examiner is incorrect in stating that column 7, lines 5-10 of Narita discloses "data points … plotted with respect to recorded time." Column 7, lines 5-10 of Narita recites, in its entirety, "After repeating execution of steps 365-368, the maximum and minimum of the output shaft torque are given by and stored as T_OPlus and T_OMinus, respectively. The maximum and minimum of the output shaft torque are used in the sub routine of FIG. 8." Steps 365-368 are described in column 6, line 59 – column 7, line 4. During steps 365-368, the present measured value of the output torque T_O is compared to the variable T_OPlus, which represents the maximum value of the output shaft torque. If the present measured value of the output shaft torque T_O is greater than T_OPlus, then the maximum value of the output shaft torque T_OPlus is assigned the present measured value of the output shaft torque T_O (i.e., T_OPlus = T_O). Similarly, the present measured value of the output torque T_O is compared to the variable T_OMinus, which represents the minimum value of the output shaft torque. If present measured value of the output shaft torque T_O is less than T_OMinus, then the minimum value of the output shaft torque T_OMinus is assigned the present measured value of the output shaft torque T_O (i.e., T_OMinus = T_O). Thus, the only data that is recorded in these steps is an output shaft torque value that exceeds a previous maximum value or that is less than a previous minimum value. The torque values (T_OPlus and T_OMinus) recorded are not associated with any time values, contrary to the Examiner's statement that "the data points are plotted with respect to recorded time."

Finally, the Examiner cites column 2, lines 14-15 of Narita in support of the Examiner's position that "Narita et al shows when the clutch gained torque capacity using the

first derivative." Column 2, lines 14-15 of Narita recites "FIG. 11 is a time sequence illustrating a power-off 1-2 upshift." As noted *supra,* Figure 11 of Narita shows graphs of several transmission variables, but Applicant cannot find any disclosure of "determining the first derivative with respect to time of at least a portion of the off-going clutch pressure command." Indeed, Figure 11 fails to show determining the first derivative of time for any variable or function.

Thus, neither of the references cited by the Examiner in the rejection of claim 1 teaches or suggests "determining the first derivative with respect to time of at least a portion of the off-going clutch pressure command; and determining when the on-coming clutch gained torque capacity using the first derivative [of the off-going clutch pressure command]."

The Examiner states that "[i]t would have been obvious … to provide the first derivative technique for calculating the timing for clutch gaining the torque capacity, as taught by Narita, to Minowa et al, for providing a practical data analyze [sic] tool." However, providing the first derivative technique of Narita to Minowa et al., as suggested by the Examiner, does not result in the claimed invention. The only first derivative technique taught by Narita et al. involves the first derivative of gear ratio with respect to time, as noted above and as disclosed in column 9, lines 55-65 of Narita. Thus, providing "the first derivative technique for calculating the timing for clutch gaining the torque capacity, as taught by Narita, to Minowa," as suggested by the Examiner, would result in Minowa employing the first time derivative of gear ratio, not the first derivative with respect to time of at least a portion of the offgoing clutch pressure command, as recited by claim 1.

Accordingly, the rejection of claim 1 is improper.

Claim 6 similarly recites "wherein the controller is programmed and configured to determine the first derivative with respect to time of at least a portion of the off-going clutch pressure command; and wherein the controller is programmed and configured to determine when the on-coming clutch gained torque capacity using the first derivative." Accordingly, the

analysis presented for claim 1 also applies to claim 6, and therefore the rejection of claim 6 is improper.

Claims 2-5 and 7-11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Minowa et al. in view of Narita and Vilim et al. (5,745,382). Claims 2-5 ultimately depend from claim 1 and therefore incorporate all of the elements and limitations of claim 1. In the rejection of claims 2-5, the Examiner relies upon Minowa et al. and Narita for all of the elements and limitations of claim 1. However, as noted above, Minowa et al. and Narita fail to disclose several elements and limitations of claim 1. Vilim et al. do not teach or suggest the elements and limitations of claim 1 missing from Minowa et al., and indeed, Vilim et al. does not even address clutch control in a transmission. Accordingly, the rejections of claims 2-5 are improper for at least this reason.

Claims 7-10 ultimately depend from claim 6, and therefore incorporate all of the elements and limitations of claim 6. As noted above, none of the references cited by the Examiner teach or suggest all of the limitations of claim 6. Accordingly, the rejections of claims 7-10 are improper for at least the same reasons that the rejection of claim 6 is improper.

Claim 11 also recites "determining the first derivative with respect to time of at least a portion of the off-going clutch pressure command, said first derivative being characterized by local minima and maxima; [and] generating a set of data points, each of the data points including a time value and a first derivative value of one of the local minima or maxima." As noted above with respect to claim 1, Minowa et al. and Narita fail to disclose determining the first derivative with respect to time of an off-going clutch pressure command. In the rejection of claim 11, the Examiner states that "Narita shows … first derivative being characterized by local minima and maxima (Col 7, lines 5-10 where the data points are plotted with respect to recorded time in Fig 11; Col 2, lines 14-15)…." Narita states, at column 7, lines 5-10, that "the maximum and minimum of the output shaft torque are given by and stored as T_oPlus and T_oMinus, respectively. The maximum and minimum of the output shaft torque are used in the sub routine of FIG. 8." (emphasis added). Thus, Narita discloses the maximum and minimum values of the

output shaft torque, not the local maxima and minima of the "first derivative with respect to time of at least a portion of the off-going clutch pressure command," as recited by claim 11.

Furthermore, as noted above, column 7, lines 5-10 of Narita does not disclose data points "plotted with respect to recorded time." Accordingly, the rejection of claim 11 is improper.

Other reasons for the impropriety of the rejections of claims 1-11 are present. However, because the rejections are clearly improper for the reasons provided above, further analysis is not necessary.

Conclusion

This reply is believed to be fully responsive to the Office Action mailed April 7, 2008. The remarks are believed to place this application in condition for allowance, which action is respectfully requested.

Respectfully submitted,

Matthew D. Whitton

By Robert C Corbett
Robert C. Corbett
Reg. No. 51,089

Date: July 7, 2008

QUINN LAW GROUP, PLLC
39555 Orchard Hill Place, Ste. 520
Novi, Michigan 48375
Phone: 248-380-9300
Fax: 248-380-8968

On behalf of:

GENERAL MOTORS CORPORATION
Legal Staff Mail Code 482-C23-B21
P.O. Box 300
Detroit, Michigan 48265-3000